

anomaly (ICD-9 codes 740.9-759.9 only). As shown in Table 1, the newborn hospital discharge records identified the most congenital anomalies for the Registry. Newborn Medicaid claims records provided the second largest number of congenital anomaly diagnoses; birth certificate records provided the third largest number of congenital anomalies.

**TABLE 1**  
**Numbers of Congenital Anomalies**  
**Reported by Source of Data**  
**and Percent of all Births**  
**North Carolina, 1988**

Source of Data	Number of Records	Percent of All Births*
Newborn Hospital Discharge Records	2,488	2.6
Newborn Medicaid Claims	1,189	1.2
Birth Certificates	1,043	1.1
Children's Special Health Services Records	740	0.8
Infant Death Certificates	256	0.3

\*Total number of resident live births in 1988 = 97,560

One can see the problem of solely using birth certificates, or any one of the other data sets alone, to determine birth defect incidence in the state. Only 1.1 percent of 1988 births were reported to have congenital anomalies according to birth certificates. This is only one-fourth of the total incidence shown by the Registry (see Table 2). Likewise, each of the other data sets alone does not yield birth defect statistics which represent the actual size of the problem.

**TABLE 2**  
**Comparison of Birth Certificate Reported**  
**Congenital Anomalies with Birth Defect**  
**Registry Reported Congenital Anomalies**  
**North Carolina, 1988**

ICD-9 Code	Birth Certificate		Registry	
	Number	Percent	Number	Percent
740-759	1,043	1.07	4,420	4.53

An analysis of the unique contribution of each of the data sets to the Registry (see Table 3) shows that 34.6 percent of the congenital anomalies are

provided exclusively by hospital discharge records. It is expected that this percentage would have been even higher had the hospital discharge data for newborns been geographically complete. In 1988, about 30 percent of the state's hospitals did not have accessible data for Birth Defects Registry purposes. It is for this reason that a geographical study of birth defects, at this point, would not be valid. Geographical areas showing a low incidence of malformations, for instance, would more than likely be areas for which some of the hospital discharge data are missing.

**TABLE 3**  
**Numbers and Percentages of Congenital**  
**Anomalies Reported by Unique and**  
**Multiple Data Sources**  
**North Carolina, 1988**

Source of Data	Number of Records	Percentage
<b>Sole Source</b>		
Newborn Hospital Discharge Records	1,530	34.6
Children's Special Health Services Records	675	15.3
Birth Certificates	517	11.7
Newborn Medicaid Claims	490	11.1
Infant Death Certificates	92	2.1
<b>Multiple Sources of Data</b>	<u>1,116</u>	<u>25.2</u>
<b>Total</b>	<b>4,420</b>	<b>100.0</b>

It is also possible that some birth defect diagnoses may be missing on the computerized hospital discharge records in North Carolina as compared to diagnoses recorded in the hospital medical records. A study by Calle and Khoury (2) revealed that a significant number of birth defects were missing on computerized hospital discharge records, especially for those births with multiple defects. Review of medical records indicated that 6.9 percent of the births had at least one congenital anomaly; the hospital discharge records showed only 3.5 percent.

The 1988 newborn Medicaid claims files identified many more congenital anomalies than the 1984-86 claims files. For the 1984-86 period, newborn Medicaid claims records uniquely supplied only 1.6 percent of the Registry's cases. In 1988, those records uniquely supplied 11.1 percent of the Registry's cases (see Table 3). Part of the reason for this large difference is